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DOCTOR DANIEL DRAKE'S REPORT

OF THE

HARRODSBURG SPRINGS,

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The Mineral Springs of Kentucky and Ohio, especially of the former, are numerous and considerably diversified in their composition and qualities. They are but little known to the profession, even of those States; who, in general, are, therefore, unable to direct their patients to a proper choice. Having visited most of them, (though not with the means of an accurate analysis, nor for a sufficient length of time to observe all their effects) I propose, in this paper, to give a brief notice of those which constitute our principal *Watering Places*.

The countries on each side of the Ohio River, present an identity in the age of their rocks, but considerable variety in their composition. They are all secondary, and disposed in horizontal strata. The predominant rocks are grey lime-stone, abounding in organic remains; and sand-stone, alternated with shivers and slate clay. The calcareous formation presents considerable variety in its geological character, as well as in its chemical composition. Springs are subterranean streams, supplied chiefly by the rains which percolate through the rocks over which they fall; and which, in their meanderings, dissolve such soluble matters as may be in their way; and hence the diversity, in quality, of the mineral waters, in the region of which I have spoken. Throughout almost every part of it, the common spring and well water, is *hard*—in other words, is impregnated with the carbonate and sulphate of lime, the muriate of soda, and other saline substances. When any one or more of these, or other ingredients, are present to a certain degree, the water is no longer regarded as fit for culinary purposes; but pronounced medicinal, and resorted to by the valetudinary. In their selection, they are too often governed by considerations of convenience, or act in almost total ignorance of the relative effects of different springs. Thus they often suffer injury, when they expect to receive benefit. A mistaken choice in the watering place, is not however, the only cause of disappointment. The conduct of the patient while there, and the exposures

to which he is subjected, contribute greatly to an unfavorable result. Hence it is by no means uncommon, to see invalids who left home in hope, return in discouragement, if not despair. For the infirm to derive advantage from the use of mineral waters, several circumstances must be attended to.

1. It is necessary that the spring should be well chosen, in other words adapted to the case of the patient.

2. That it should be in a healthy situation; or one, at least, as exempt as possible from the causes which induced the disease which is to be cured.

3. That the malady should be curable; or, if not curable, susceptible of palliation.

4. That it should not be of such a kind as to be aggravated by exercise.

5. That the patient should be comfortably lodged, in a dry and airy apartment, instead of being confined in a small cabin or room, close upon the ground floor, surrounded by high weeds and grass, in a damp valley, as is too often the case.

6. That he should not participate in the dissipation, which is so commonly practised by those who visit watering places for amusement only.

7. That he should be exceedingly temperate and simple in his diet.—Mineral waters of almost every kind, sharpen the appetite, sometimes to a morbid degree, and the majority of patients suppose, or pretend to suppose, that while at a mineral spring, they may indulge themselves with impunity. Thus, in numerous instances, the beneficial effects of the water, are more than counterbalanced, by errors and excesses in diet.

8. That he should visit the watering place between the 15th or 20th of May, and the same period in September. The proper time, in this country, is the four months preceding the autumnal equinox; though, on the whole, it is better and safer to limit the residence to the three summer months.—The first half of May is almost always too cool and rainy to be comfortable; and most watering places too much infested with fevers after the first of September, to justify a long sojourn at them. These are given, however, as general rules, to which there are exceptions.

9. That the patient should remain longer than is usual. Of all men, the Anglo-American is, perhaps, the most impatient. He arrives at a watering place, and like a thirsty animal, obedient only to his sensations, proceeds to drench himself. In three or four days he is, perhaps, worse than when he arrived; and, in a week, he decides, that the waters can do him no good, falls into displeasure with every thing about him, and repairs to another spring, or returns home in regret, at his useless expenditure of strength and money.

In most cases, mineral waters should be drunk moderately and perseveringly. Their specific effects, in many instances, are not perceived, nor, indeed, produced for some time. Their first impression, on many invalids, is unfavorable; but, by continuing them, the constitution, at length, becomes reconciled to their action, and is ultimately strengthened by it.

10. That in journeying to the watering place, he should proceed with deliberation, and not in a feeling of anxiety to reach the fountain upon which his imagination is turned, subject himself to long daily journeys and great fatigue. The end cannot justify such means. He should look to the travelling not less than the water to which it is to conduct him, as a source

of benefit; and, so perform it, as to increase instead of exhausting his strength.

11. That he should not place too exclusive a reliance on the water. It may be an important, without being the only, means of cure. In many cases, a particular course of diet is necessary, and should not be abandoned. In others, certain medicines are requisite and should be persevered in.

By an attention to these, and such other rules as individual cases will suggest, mineral waters may do good in various cases; and, aided by the travelling, and the reviving and alternative influences of pleasant scenery and new social aspects, may, sometimes, effect that which all the drugs of the apothecary could not reach; and, what is still more, may avert the fate which, in chronic diseases, too often awaits him who is, from day to day, compelled to swallow them *en masse*. There are physicians who estimate the value of their interference, by the bulk and number of their boluses; and any spring, not abundantly impregnated with arsenic, would prove a fountain of health to all whom it might extricate from such keeping. These strictures, apparently severe, are directed against the practice in chronic diseases, only; but it is generally for them that mineral waters are prescribed.

Having premised these general remarks, on the use and abuse of mineral waters, I shall proceed to speak, in detail, of some of the principal watering places in the West.

Harrodsburg Springs.—The town of Harrodsburg, one of the oldest in Kentucky, is situated ten miles south of the river which bears that name, and near the geographical centre of the State. The site is elevated, rocky and rolling, but not hilly; and the surface of the surrounding country has the same character. Neither the town, nor its immediate vicinity, presents, in its scenery, any thing striking or picturesque; but within two or three hours ride, in different directions, the perambulating invalid may see several objects not unworthy of notice.

1. Union Village, inhabited by Shakers, who exhibit a characteristic specimen of the social, economical, and political relations of that singular people.

2. The spot denominated Klob-Lick, fifteen miles S. E. of Harrodsburg, five miles from the old and pleasant village of Danville, the site of Centre College; and two miles from the farm of the late venerable Gov. Shelby.—The knobs or hills, are from one to two hundred feet high, more or less conical, some of them insulated, others connected by crumbling isthmuses—the whole forming a group of barren, conoidal eminences, which are finely contrasted with the deep verdure of the surrounding plain. They consist of a marlaceous slate clay, strongly inclined to disintegration & reposing on shale.

3. The gray, mural cliffs of the Kentucky river, which flows in a narrow and winding ravine, nearly 400 feet in depth. This great natural canal, may be visited with facility, by several roads; and offers, in the grandeur of its high and precipitous banks, embellished with evergreens, a great deal to interest all who have a taste for the sublime and beautiful. But we must return to that which is more important to the invalid—

THE SPRINGS. These are four or five in number. They burst out near

the summits of the ridges, on which the village of Harrods-burg, is built.—The mass of these ridges is composed of lime-stone, much of which is of a fine grain, and impregnated with magnesia. All the springs afford water, essentially of the same composition; though the proprietors are accustomed to speak of them, as presenting some variety in their qualities and effects. None of the veins are large. They have no gaseous impregnation, and consequently, do not sparkle. Their temperature is that of other springs, not more copious, in the same latitude—about 58 degrees of Fahrenheit.

The water from one of them, on the land of Doct. Graham, has been examined, with some care, by Dr. Best and myself. The following is a statement of the experiments made, and the results obtained; which, although not so rigorous and comprehensive, as to constitute a perfect analysis, will convey a correct general idea of the composition of all the fountains.

EXPERIMENTS.

1. Prussiate of potash and infusion of galls produced a slight discolouration, both before and after boiling.

2. Nitric acid occasioned no change, nor effervescence.

3. Oxalic acid produced an obvious and diffused whiteness, which appeared slowly, and the same effect occurred after boiling.

4. Acetate of lead threw down a copious white presipitate, soluble in nitric acid.

5. Nitrate of silver produced the same kind of precipitate, soluble in the same acid, and also, in ammonia.

6. The carbonate of ammonia caused a slight whiteness; and, upon the addition of the phosphate of soda, a copious white precipitate ensued.

7. One thousand grains of the water, evaporated, left a residuum of dry white matter, which, when apparently deprived of its water of crystallization, weighed twelve grains.

During the evaporation a slight pellicle formed on the surface.

8. A portion of this residuum afforded an effervescence with several acids, and was wholly soluble, in dilute muriatic acid.

9. Of this effervescent portion, nearly the whole was found to be soluble in sulphuric acid. The remainder was probably lime; which, united with the sulphuric acid, would remain undissolved. From this solution, the addition of carbonate of ammonia and phosphate of soda, threw down a copious white precipitate.

10. One thousand grains of the water were evaporated to one half. Lime water was then added, which produced a turbidness. The liquor was filtrated. Oxalic acid was then added to it, and occasioned a precipitate. It was filtrated again and concentrated still further. Acetate of Barytes was then added, (not in excess) and produced a copious white precipitate. The solution was finally evaporated to dryness, and heat enough applied to decompose and drive off the acetic acid.—The residuum, dissolved in water, changed the vegetable blues to green.

CONCLUSIONS.

This water, it would seem, from the foregoing experiments, contains the following salts:

1. Sulphate magnesia, in large quantities. This is the characteristic ingredient.

2. Carbonate of magnesia, in a small quantity.

3. Sulphate of soda, do.

4. Sulphate of Lime, do.

5. Carbonate of Lime, in minute do.

6. Iron (probably in the state of a sulphate) a trace.

7. A minute quantity of sulphuretted hydrogen, as I ascertained by experiments, made at the spring itself.

From this analysis, it appears that the waters of the Harrodsburg Springs, bear some resemblance, in the materials which they hold in solution, to the celebrated Seidlitz fountain of Bohemia. Their predominant ingredient, is sulphate of magnesia, or Epsom salt; though the other matters which they contain, especially the sulphate of iron, small as it is in quantity, may contribute to their beneficial effects.

I am not in possession of the facts, necessary to a full *expose* of their therapeutick powers; but that these are so great as justly to place them at the head of all the known mineral springs, in the states bordering on the Ohio river, I have no doubt.

The cases to which they are, in a peculiar manner, adapted are chronic inflammations, and obstructions in the abdominal viscera. Thus, they are, eminently serviceable, in such cases of dyspepsia, as are attended with subacute gastritis; in almost every kind of hepatic disorder, except when the liver is indurated, and consequently, incurable; and in constipation, so constant an attendant on diseases of the stomach and liver. They are almost equally beneficial, in chronic inflammations of many other parts of the system—especially of the serous and fibrous membranes. In tonic dropsies, in rheumatism, and in various affections of the periosteum from febrile metastases, from syphilis and from mercury, they have often effected a cure, when other means had failed. In several urinary disorders they have done equal good. In chronic diseases of the skin, they have, also, been found useful, when the patient has been subjected to a regimen, that has determined them to the surface. In pulmonary complaints, they have been found serviceable; but not in the same degree, as in disorders of the abdominal organs; and their use in the maladies requires discrimination. In chronic pleurisy, and the early stages of subacute bronchitis, they have performed cures; but in vomica, tubercular suppurations, and hepatization of the pulmonary tissue, they are injurious; and, if persevered in, may even prove fatal. When they have rendered occasional assistance in these affections, it was chiefly by correcting a morbid condition of the digestive functions, so often associated with them. In sick headache they occasionally, do good; but many cases of that obstinate malady, are attended with such an enervated condition of the nervous system, that their sedative operation becomes prejudicial. In headaches, dependent, however, on a phlogistic diathesis, they are saluary. Finally, in ophthalmia, during the stages of acute and subacute inflammation—as long as depletives and sedatives are indicated—they may be relied upon as an efficient remedy.

It would be superfluous to cite other examples of their efficacy. The principle upon which they should be prescribed is obvious. Reducing the power of the heart, and acting as a diuretic, cathartic and sudorific, they are adopted to almost every case of inflammatory disease; while they are, contraindicated, in most organic lesions, in exhausted states of the system from profuse discharge of every kind; and in all cases of broken up and ruined constitution. Of temperaments, the sanguineous and bilious bear

them best; to the nervous and phlegmatic they are generally useless, not unfrequently offensive, and sometimes almost pernicious.

I have already intimated their *modus operandi*. Their influence on the circulation is, I believe, invariably, that of a refrigerant and sedative.— Their action on the kidneys is, in general, that of a powerful diuretic, in which the water itself, no doubt, performs an important, though not an exclusive part. In the majority of persons, they, also, operate on the bowels, as a hydragogue cathartic; but those who are strongly inclined to constipation, or experience, in an uncommon degree, their diuretic influence, occasionally find it necessary to add to them a portion of the salts, which are prepared by evaporating the water, and are kept at the springs for that purpose. To determine them upon the skin, they should be taken, chiefly at night; the patient lying in bed, with the surface of his body closely, but thinly covered. In these cases, two small matters require attention; for without an observance of them, the desired effect cannot always be obtained:

1. The forehead of the patient should be covered with a slip of flannel, as directed by Sydenham, when sweating is the object.

2. He should be left alone, or, at least, not be allowed to talk or read. If the waters be taken warm or hot, their sudorific effect will, in most cases, be greater, than if taken cold. Lastly when all these means are unavailing, an opiate—for example, the pulvis Doveri—should be employed, and will in general, be successful.

It is a common remark, that these waters do not oppress the stomach.— This is not owing to the presence of carbonic acid gas, or any other æriform fluid; but to their passing the pylorus, or being drunk up by the veins of the stomach, very soon after they are received into that organ. It is to the stimulus saline matters which they contain, that their early exit from it should be attributed.

The operation of this water is four fold, viz: Cathartic, Diuretic, Diaphoretic and Tonic. There have been many conjectures in regard to its Tonic and Diaphoretic powers, and many qualities assigned it, not dictated by analysis. It is believed to contain Iodine. There may be many substances in this, as well as other mineral waters, wholly beyond the reach of chemical tests. Chemists profess to give us the contents of our atmosphere, and yet our senses show the existence of many ingredients that elude chemical scrutiny, as the various effluvia and smells, agreeable and disagreeable, miasma, the causes of the various forms of fever, the matter of small pox and of many other diseases. It matters not, however, what it may or may not contain, as its actual operation upon the system when drunk is the object of the visitor. It is believed that a greater mass of evidence might be procured in favor of the medicinal powers of the Harrodsburg waters, than that of any other yet ever known. There is no room in this short report for the testimony of the thousands who have been cured of the most obstinate affections by its use. The following additional authority of scientific and disinterested Physicians may suffice to give the wavering visitor confidence and perseverance.

A Short Report made by Doctors Drake and Best, upon their first analysis:

“We do not hesitate to say, that from the composition of the Harrodsburg Water, it must be exceedingly valuable, particularly in chronic diseases of the abdominal organs, following bilious fever, dysentary, diseases of the liver, and other

complaints of hot climates. In its composition it more nearly resembles the celebrated Springs of Seidlitz in Bohemia, than any European waters, with the history of which we are acquainted." Signed,

DANIEL DRAKE, M. D.

Professor of Materia Medica and Medical Botany.

ROBERT BEST, M. D.

Professor of Chemistry and Pharmacy in Transylvania University.

The Physicians of New Orleans who have much experience in its use speak as follows: "We, the undersigned, practitioners of Medicine in the City of New Orleans, think so highly of the Medical properties of the Sutton, or Harrodsburg water, as to recommend it to public confidence." Signed,

D. C. KEER,	R. DAVIDSON,	R. C. RANDOLPH,
S. HEARMANN,	W. FLOOD,	J. RICE,
R. DOW,	W. W. NEW,	S. C. SMITH,
	A. PERLEE,	J. DWYER.

The number of obstinate diseases that have been cured in this City, by its use, are too numerous to mention here again. "We the undersigned, practitioners of Medicine, residing in Baton Rouge, do from experience, warmly recommend the Sutton or Harrodsburg Water to public confidence." Signed,

D. C. HATCH,	B. F. HARNEY, Sur. U. S. A.
W. WILLIAMS,	C. B. FRENCH.

A Letter from Doctor McMahon,

NEW ORLEANS, 3d JUNE, 1825.

"Doctor C. Graham.—Personal experience satisfies me that your Harrodsburg Water possesses many valuable and exclusive qualities, which entitle it to a high rank amongst the remedial agents employed for the cure of diseases in this climate. Its use, in army practice, would be attended with the most beneficial consequences! Intemperance is one main source of disease among soldiers, and there is no curative means, within our control that can so speedily and effectually remove its sequelæ, and restore tone to the system as this water. In convalescence from the different grades of bilious or gastric fever, its action is also no less powerful and efficacious. Its introduction into army practice would receive my cordial approbation." J. P. C. McMAHON, Sur. U. S. A.

Dr. J. LOVELL, Surgeon General of the United States, has since authorised the Surgeons of the south to purchase of the water and powders for army practice. A Letter from New York: "New York, May 1st, 1826. Sir: I enclose you a ten dollar bill, the worth of which I wish you to forward me in Harrodsburg powders, the efficacy of which I have sufficiently tested in cases of dyspepsia, to esteem them as a most valuable medicine. Other officers of the army are desirous of procuring of them if possible. I am pleased to hear that Doctor Harney, surgeon at Baton Rouge, to whom I had recommended them, has succeeded in his application to have them allowed to the United States' Hospitals on the Mississippi river.

S. MAKENZIE, of the U. S. Army, State of N. Y.

The Report of Dr. Rogers. Physician to the Charity Hospital, N Orleans.

"From my own observation of the use of the Harrodsburg water, and from the report of others who have used it of their own accord, or through the advice of other Physicians, I am induced to believe it to be useful as a mild laxative, or as an alternative when the system has been deranged from excesses in eating or drinking. I have known it likewise beneficial in cold Phlegmatic habits: attended with swelled legs, and in cases of enlarged spleen from tedious intermittent fevers.

Signed,

W. ROGERS.

A plain, simple diet, as observed by Dr. Drake, is best for all persons afflicted, and more particularly with dyspepsia. An observance of the health, vigour and

almost perfect exemption from disease of Waggoners, Huntsmen and Savages, whose diet is rough and generally scant, will suffice to point out the proper course to be observed in regard to diet. Regular rest, early rising, and as much exercise as possible should be observed. No one who wishes for health should sleep on feathers in warm weather. One who lies buried in feathers, and sweating through a hot summer night will rise languid, with coated tongue and disordered stomach—this is more particularly the case with persons using the water, which causes a free perspiration. This perspirable matter, instead of passing off from the body freely, and a constant fresh accession of vital air allowed, as designed by nature, it is confined about the person, and breathed with the exhalations of the lungs, over and over again. All the secretions and exhalations of the body are thrown off as not only useless but injurious, and should not be taken into it again. It has been observed that woodsmen and such as live in the open air, enjoy health, and if is not so much from rough living as from hard lying, and breathing a fresh and vital air. Hard lodging has the same effect as exercise. It diverts or translates morbid excitement from the organ diseased to the muscles and the surface. This is the secret why many persons can sleep sitting up or leaning down upon chairs or a settee, who, the moment they touch their bed are deserted by sleep and pass miserable and restless nights. Where there is neither exercise nor hard lying to divert excitement, the sensorial power or excitability accumulates upon the diseased organ like the concentrated and burning rays brought to a focus. Lying in the open air upon the ground, or upon a board or plank, would cure many diseases that resist all medical skill. The visiter should go to the spring in the morning, and if possible, take as much of the water pure and fresh as it issues from the bowels of the earth, as will serve for the 24 hours. If enough can be drank before breakfast to procure one or two free evacuations through the day, the stomach should be left undisturbed till the following morning. In very costive habits when such quantity cannot be taken at once, it may also be used before dinner and supper. Persons who expect relief, or even any sensible relief, from a few drafts of the water, or any other earthly remedy will be disappointed. Nothing short of supernatural agency is going to revolutionize the system in a few days. In many cases it requires months or years to effect it safely and successfully. As well might the child, desirous of adult size, expect to pass from youth to manhood by a few hearty diets or stuffings of the stomach; and yet how many presume to pass judgment, despair without a single rational effort. It is firmness, fortitude, and perseverance, that overcomes diseases as well as other difficulties of life.

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